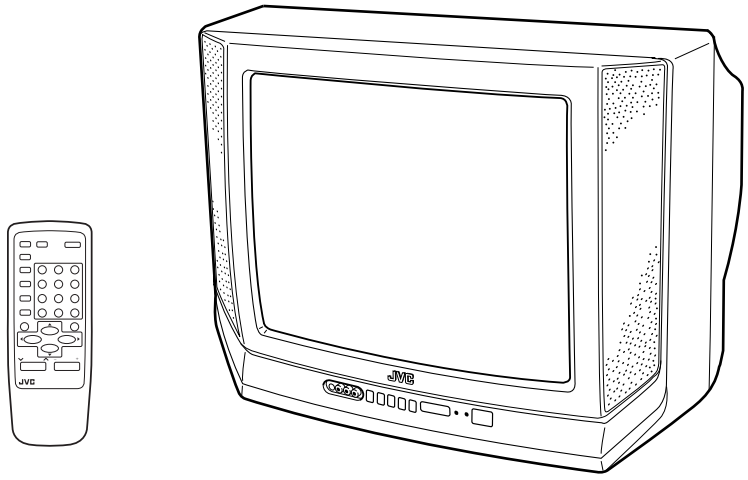
JVC

SERVICE MANUAL

COLOR TELEVISION

BASIC CHASSIS
GA2

AV-14F3PX(PH)



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No. 56083
Sep. 2000

SPECIFICATIONS

Item		Content
Dimensions (W × H × D)		462mm × 340.5mm × 375mm
Mass		10kg
TV RF System		CCIR (M) & (N)
Color System		NTSC / PAL-M / PAL-N
Sound Multiplex System		BTSC (Multi-channel sound)
TV Receiving Channel and Frequency		
VHF (VL) Band		(02 ~ 06) 54MHz ~ 88MHz
VHF (VH) Band		(07 ~ 13) 174MHz ~ 216MHz
UHF Band		(14 ~ 69) 470MHz ~ 806MHz
CATV Receiving Channel and Frequency		
Low Band		(02 ~ 06) (54MHz ~ 804MHz)
High Band		(07 ~ 13)
Mid Band		(14 ~ 22)
Super Band		(23 ~ 36)
Hyper Band		(37 ~ 64)
Ultra Band		(65 ~ 94, 100 ~ 125)
Sub Mid Band		(01, 96 ~ 99)
TV/CATV Total Channel		180 Channels
Intermediate Frequency		
VIF Carrier		45.75MHz
SIF Carrier		41.25MHz (4.5MHz)
Color Sub Carrier Frequency		NTSC: 3.579545MHz PAL-M: 3.57561149MHz PAL-N: 3.58205625MHz
Aerial Input Terminal		75Ω Unbalanced
Power Input		Rating: AC110 ~ 240V, 50/60Hz Operating: AC90 ~ 260V, 50/60Hz
Power Consumption		44W
Picture Tube		Visible size : 34cm measured diagonally
High Voltage		22.5kV ± 1kV (at zero beam current)
Speaker		5cm × 9 cm Oval type × 2
Audio Output		1.5W+1.5W (Stereo)
Input	Video	1Vp-p, 75Ω
	Audio (L/R)	500mVrms (–4dBs), High impedance
Output	Video	1Vp-p, 75Ω
	Audio (L/R)	500mVrms (–4dBs), Low impedance
Headphone Jack		Stereo mini jack (3.5ø)
Remote Control Unit		RM-C373-1H (Battery size : AA/R06/UM-3 × 2)

Design & specifications are subject to change without notice.

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED (NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

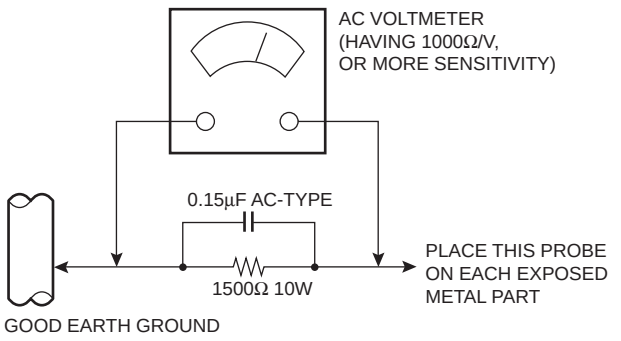
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

9. **Isolation Check**
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

   (1) **Dielectric Strength Test**
   The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
   (. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
   This method of test requires a test equipment not generally found in the service trade.

   (2) **Leakage Current Check**
   Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
   However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

   ● **Alternate Check Method**
   Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15µF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
   However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



FEATURES

- New chassis design enables use of an interactive on-screen control.
- Wide range voltage for AC power input.
- With AUDIO / VIDEO INPUT & OUTPUT terminals.
- MUTING button can reduce the audio level to zero instantly.
- Functional remote control to operate TV set (for channel select, volume control, power ON/OFF, etc.) from a distance.
- I^2C bus is used to control V/C & DEF 1 chip IC, tuner, etc.
- By means of AUTO PROGRAM, the TV stations can be selected automatically and the TV channels can also be rearranged automatically.
- Built-in RETURN +.
- Built-in RTC (real-time clock) enables ON/OFF timer settings.

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the AC power cord.
2. Remove the **5** screws marked "**A**" and **2** screws marked "**B**".
3. Withdraw the rear cover backward.

REMOVING THE MAIN PW BOARD

- After removing the rear cover.

1. Slightly raise both sides of the Main PW Board by hand and remove the PB stopper **"C"** from the cabinet.
2. Withdraw the Main PW Board backward.
   (If necessary, take off the wire clamp, connectors etc.)

REMOVING THE SPEAKER

- After removing the rear cover.

1. Remove the **2** screws marked "**D**".
2. Follow the same step for removing the other hand speaker.

CHECKING THE MAIN PW BOARD

To check the back side of the Main PW Board, follow the next steps.

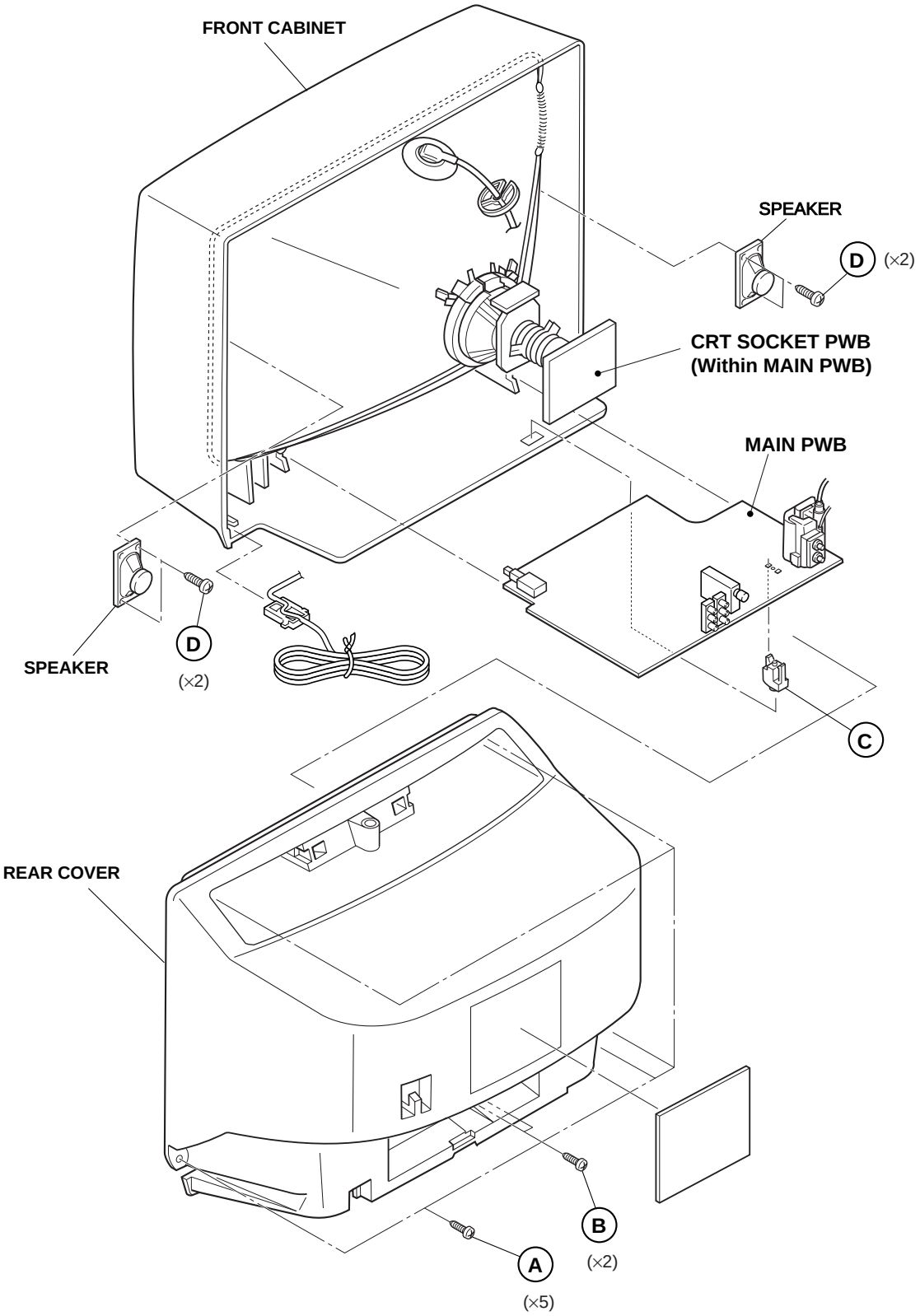
1. Pull out the Main PW Board. (Refer to "REMOVING THE MAIN PW BOARD".)
2. Erect the Main PW Board vertically so that you can easily check its back side.

CAUTION:

- When erecting the Main PW Board, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that all connectors are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.


FRONT CABINET
SPEAKER
D
(×2)
CRT SOCKET PWB
(Within MAIN PWB)
MAIN PWB
SPEAKER
D
(×2)
C
REAR COVER
B
(×2)
A
(×5)

REPLACEMENT OF MEMORY IC

1. MEMORY IC

This TV uses the following memory IC.

Memory IC: IC1704 on MAIN PW Board

The memory IC memorizes data for correctly operating the video and deflection circuits. When replacing the memory IC, be sure to use the same type IC written with the initial values of data. In other words, use the specific IC listed in "PRINTED WIRING BOARD PARTS LIST". For its mounting location, refer to "ADJUSTMENT LOCATIONS".

2. PROCEDURE FOR REPLACING MEMORY IC

(1) Power off

Switch the power off and unplug the power cord from the wall outlet.

(2) Replacing the memory IC

Replace the memory IC with new one. Be sure to use the memory IC written with the initial data values.

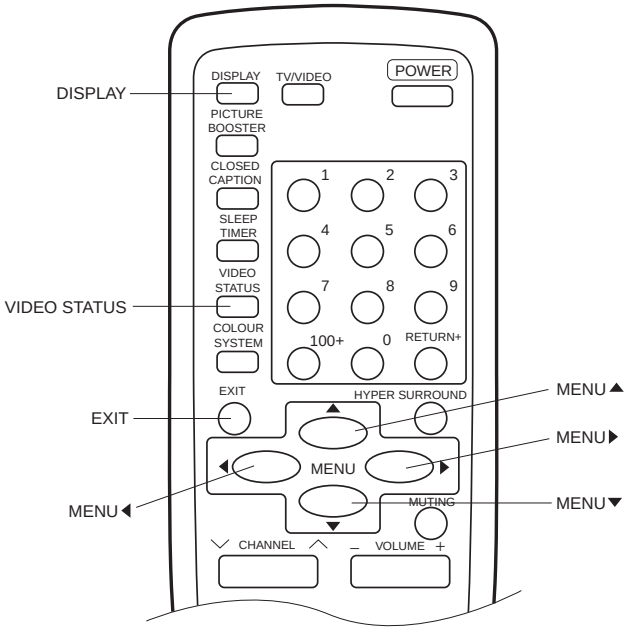
(3) Power on

Plug the power cord into the wall outlet and switch the power on.

(4) Check and setting of SYSTEM CONSTANT SET:

1) Press the DISPLAY key and the VIDEO STATU key on the remote control unit simultaneously.
   The SERVICE MENU screen will be displayed. (See Fig. 1.)
2) In the SERVICE MENU, again press the DISPLAY key and the VIDEO STATU key simultaneously. Then, the SYSTEM CONSTANT SET screen will be displayed. (See Fig. 2.)
3) Check whether the setting values of the SYSTEM CONSTANT SET are the same as those indicated in Table 1. If the value is different, select the setting item with the MENU ▲/▼ key, and set the correct value with the MENU ◀/▶ key.
   (The selected value will be stored in memory when the MENU ◀/▶ key is released.)
4) Press the EXIT key twice to return to the normal screen.

NAME OF REMOTE CONTROL KEYS



(5) Receive channel setting

Refer to the **OPERATING INSTRUCTIONS** and set the receive channels (channels preset).

(6) User settings

Check the user setting items in Tables 2-1 and 2-2, and if setting value is different, set the correct value.
For setting, refer to the **OPERATING INSTRUCTIONS**.

(7) Setting of SERVICE MENU

Verify the setting for each setting item in the SERVICE MENU. (See Table 3.) If readjustment is necessary, perform adjustment referring to "SERVICE ADJUSTMENTS".

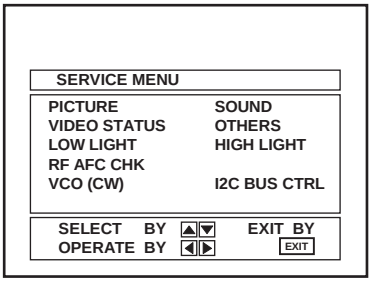


Fig. 1

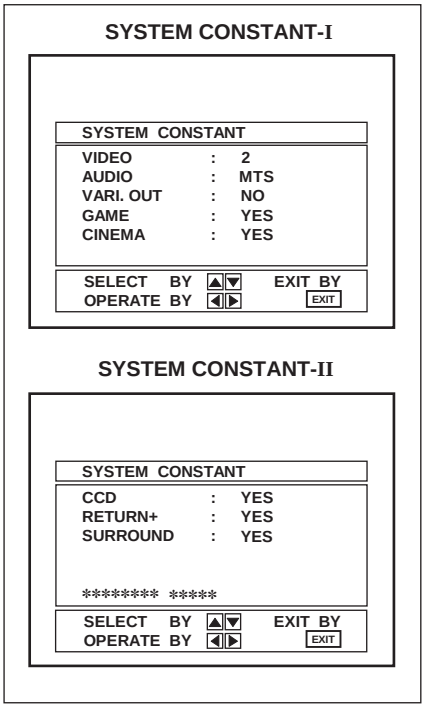


Fig. 2

SETTING OF SYSTEM CONSTANT SET

Table 1

Setting item	Setting contents	Se tting value
VIDEO	1 → 2	2
AUDIO	MONO → PH. MONO → MTS	MTS
VARI. OUT	YES → NO	NO
GAME	YES → NO	YES
CINEMA	YES → NO	YES
CCD	YES → NO	YES
RETURN+	YES → NO	YES
SURROUND	YES → NO	YES

USER SETTING VALUES

● **Setting of Function**

Table 2-1

Setting item	Setting value	Setting item	Setting value
MAIN POWER	OFF	SLEEP TIMER	0
SUB POWER	ON	VIDEO STATUS	STANDARD
CHANNEL	CH 02	CLOSED CAPTION	OFF (CC1/T1)
CHANNEL PRESET	Refer to OPERATING INSTRUCTIONS	COLOR SYSTEM	AUTO
VOLUME	10	HYPER SURROUND	OFF
TV/VIDEO	TV	PICTURE BOOSTER	OFF
DISPLAY	OFF		

● **Setting of Menu**

Table 2-2

Setting item	Setting value	Setting item	Setting value
TINT	CENTER	ON/OFF TIMER	NO
COLOR	CENTER	CHANNEL SUMMARY	Unnecessary to set
PICTURE	CENTER	SET LOCK CODE	Unnecessary to set
BRIGHT	CENTER	CHILD LOCK	OFF
DETAIL	CENTER	AUTO TUNER SETUP	AIR
BASS	CENTER	NOISE MUTING	OFF
TREBLE	CENTER	BACKGROUND	BLACK
BALANCE	CENTER	CLOSED CAPTION	CC1 / T1
MTS	STEREO	LANGUAGE	ENG.
SET CLOCK	Unnecessary to set		

SERVICE MENU SETTING ITEMS

Table 3

Service menu	Setting item
PICTURE	1. PICTURE
	2. BRIGHT
	3. COL. PALM
	4. COL. PALN
	5. COL. NTSC
	6. TINT
	7. TV DTL — **Do not adjust.**
	8. EXT PIC.
	9. EXT BRI.
	10. EXT COL.
	11. EXT TINT
	12. EXT DTL
	13. P/N KILL
	14. Y S CONT
	15. TV Y-DL
	16. EXT Y-DL
	17. WPL SW
	18. Y GAMMA
	19. P/N G P.
	20. COL. L SW
	21. COL. LMT.
	22. PN C. ATT
	23. OFST. SW
	24. OFST. B-Y
	25. OFST. R-Y
	26. C-TOF SW
	27. TV T FO
	28. TV T Q
	29. EXT T FO
	30. EXT T Q
	31. C-TRAP
	32. C-TR. FO
	33. C-TRAP Q
	34. FIX B/W
	35. APA P. FO
	36. DC TRAN.
	37. B. ST. SW
	38. B. ST. PO.
	39. ABL GAIN
	40. ABL PO.
	41. HALF T.
	42. DRV G SW
	43. NT. COMB
	44. COIN DET
	45. NOISE L.
	46. VCD MODE
	47. V AGC SP
	48. H POS. 50
	49. H BLK. 50 — **Do not adjust.**
	50. V POS. 50
	51. V SIZE50
	52. V S CR50
	53. V LIN. 50
	54. H POS. 60
	55. H BLK. 60 — **Do not adjust.**
	56. V POS. 60
	57. V SIZE60
	58. V S CR60
	59. V LIN. 60
	60. RF AGC
SOUND	1. NOISE — **Do not adjust.**
	2. IN LEVEL
	3. FH MON.
	4. ST VCO
	5. PILOT
	6. FILTER
	7. LOW SEP.
	8. HI SEP.
	9. 5FH MON.
	10. SAP VCO
	11. IN GAIN — **Do not adjust.**
	12. FIL. OFF.
VIDEO STATUS	TINT — **Do not adjust.**
	COLOR
	PICTURE
	BRIGHT
	DETAIL
	G DRIVE
	B DRIVE
	R CUT.
	G CUT.
	B CUT.
OTHERS	1. OSD HP — **Do not adjust.**
	2. OSD VP
	3. H-CK SW
LOW LIGHT	R CUTOFF
	G CUTOFF
	B CUTOFF
HIGH LIGHT	G DRIVE
	B DRIVE
RF AFC CHK	RF AFC — **Do not adjust.**
	FINE
VCO (CW)	IF VCO (CW) adjustment mode
I²C BUS CTRL	I²C BUS
	(Fixed to ON state.)

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

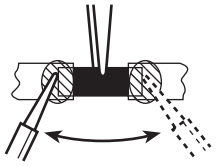
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30W soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

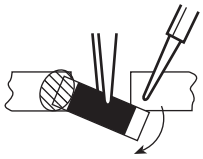
1. How to remove Chip parts

● **Resistors, capacitors, etc.**

(1) As shown in the figure, while pushing the chip part with tweezers, alternately melt the solder at its each end.



(2) Shift the chip part with tweezers and remove it.



● **Transistors, diodes, variable resistors, etc.**

(1) Apply extra solder to each lead.

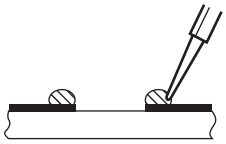
(2) As shown in the figure, while pushing the chip part with tweezers, alternately melt the solder at its each lead. Then, shift and remove the chip part.

Note : After removing the part, remove remaining solder from the pattern.

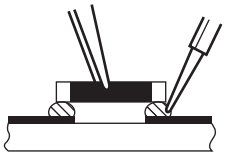
2. How to install Chip parts

● **Resistors, capacitors, etc.**

(1) Apply solder to the pattern as indicated in the figure.

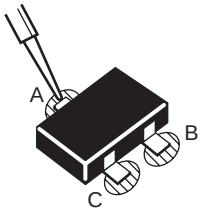


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

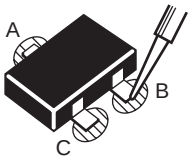


● **Transistors, diodes, variable resistors, etc.**

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. **There are 2 ways for adjusting this TV: One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
2. **The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
3. Make sure that connection is correctly made to AC power source.
4. Turn on the power of the TV and measuring instrument for warming up for at least 30 minutes before starting adjustment.
5. If the receive or input signal is not specified, use the most appropriate signal for adjustment.
6. Never touch parts (such as variable resistors, transformers and capacitors) not shown in the adjustment items of this service adjustment.
7. Preparation for adjustment (presetting):
   Unless otherwise specified in the adjustment items, preset the following functions with the remote control unit.

Function	Setting value
VIDEO STATUS	STANDARD
BASS, TREBLE, BALANCE	CENTER
TINT, COLOR, PICTURE, BRIGHT DETAIL	CENTER

MEASURING INSTRUMENT AND FIXTURES

1. DC voltmeter (or Digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [PAL / SECAM / NTSC]
4. Remote control unit
5. TV audio multiplex signal generator
6. Frequency counter

ADJUSTMENT/CHECK ITEMS

Adjustment/Check item	Page
B1 POWER SUPPLY Check	16
IF VCO Adjustment	16
RF AGC Adjustment	16
FOCUS Adjustment	16
DEFLECTION CIRCUIT Adjustment	17
VIDEO/CHROMA CIRCUIT Adjustment	18
VIDEO STATUS Adjustment	21
MTS CIRCUIT (AUDIO CIRCUIT) Adjustment	22
X-RAY PROTECTION Check	23
PURITY, CONVERGENCE Adjustment	24

BASIC OPERATION IN SERVICE MENU

1. **TOOL OF SERVICE MENU OPERATION**
   Operate the SERVICE MENU with the remote control unit.

2. **SERVICE MENU ITEMS**
   With the SERVICE MENU, various settings (adjustments) can be made, and they are broadly classified in the following items of settings:

- ● PICTURE ..... For entering/adjusting the setting values (adjustment values) of the VIDEO/CHROMA and DEFLECTION circuits.
- ● SOUND ..... For entering/adjusting the setting values (adjustment values) of the AUDIO circuits.
- ● VIDEO STATUS ..... For setting the values for CINEMA and GAME.
- ● OTHERS ..... For setting the values of other items.
- ● LOW LIGHT ..... For setting the values of WHITE BALANCE circuit.
- ● HIGH LIGHT ..... For setting the values of WHITE BALANCE circuit .
- ● RF AFC CHK ..... For checking the RF AFC circuit. **(Do not adjust.)**
- ● VCO (CW) ..... For adjusting the IF circuit.
- ● I^2C BUS CTRL ..... I^2C BUS ON/OFF CONTROL. **(Fixed to ON.)**

3. BASIC OPERATION IN SERVICE MENU

NOTE: In each menu screen, key operation guide will appear at the bottom, which will help your menu operation.

(1) How to enter SERVICE MENU

Press the DISPLAY key and the VIDEO STATUS key on the remote control unit simultaneously.

The SERVICE MENU screen will be displayed. (See Fig. 1.)

- To return to the previous screen, press the EXIT key on the remote control unit.

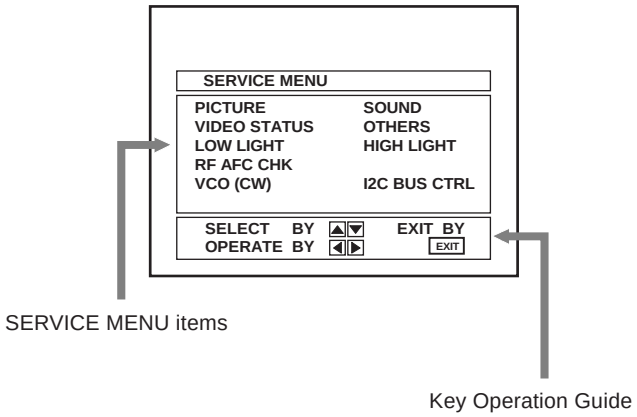
(2) Selection of Sub Menu Screen

See Fig. 3, menu diagram, on the next page.

1) Press the MENU ▲/▼ key on the remote control unit to select an item in the SERVICE MENU screen.
2) Enter the Sub Menu as follows:
   - **Entering "PICTURE", "SOUND", and "OTHERS" Sub Menus**
     Press the MENU ◄/► key in the SERVICE MENU screen. Then, the Screen A shown in Fig. 3 on the next page will appear.
     In the Screen A, press the MENU ▲/▼ key to enter the Sub Menu screen.
   - **Entering other than above Sub Menus**
     Press the MENU ◄/► key in the SERVICE MENU screen. Then, the Sub Menu screen will directly appear.

- To return to the previous screen, press the EXIT key on the remote control unit.

SERVICE MENU



▲/▼ key: Press to select an item.
◄/► key: Press to enter the SUB MENU screen of the selected item.
EXIT key: Press to return to the previous screen.

Fig. 1 SERVICE MENU

SERVICE MENU → SUB MENU

PICTURE	**SOUND**
VIDEO STATUS	**OTHERS**
LOW LIGHT	**HIGH LIGHT**
RF AFC CHK	
VCO (CW)	**I²C BUS CTRL**

(3) Method of Setting in the Sub Menu Screen

*Once the setting values are set, they are automatically memorized.

1) PICTURE, SOUND, VIDEO STATUS, OTHERS

▲/▼ key: Press to select an item in the Sub Menu.
◄/► key: Press to select the value of the selected item.
EXIT key: Press to return to the previous screen.
VIDEO STATUS key: In the VIDEO STATUS sub menu screen, press to switch between VIDEO STATUS-GAME and VIDEO STATUS-CINEMA.

2) LOW LIGHT, HIGH LIGHT

Setting will be done by using the numeral key on the remote control unit.

3) RF AFC CHK

Do not adjust.

4) VCO (CW)

Setting will be done by adjusting the CW TRANSF. (T111) on the Main PWB.

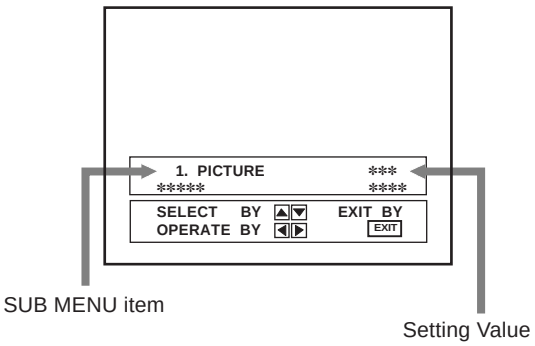
5) I2C BUS CTRL

Do not adjust. This item should always be fixed to ON to normally operate the TV set.

(4) Release of SERVICE MENU

After completing the setting, repeatedly press the EXIT key until the screen returns to the normal screen.

SUB MENU: PICTURE



▲/▼ key: Press to select an item.
◄/► key: Press to set the value.
EXIT key: Press to return to the previous screen.

Fig. 2 SUB MENU example (PICTURE)

Fig. 2

SERVICE MENU AND SUB MENU SCREENS

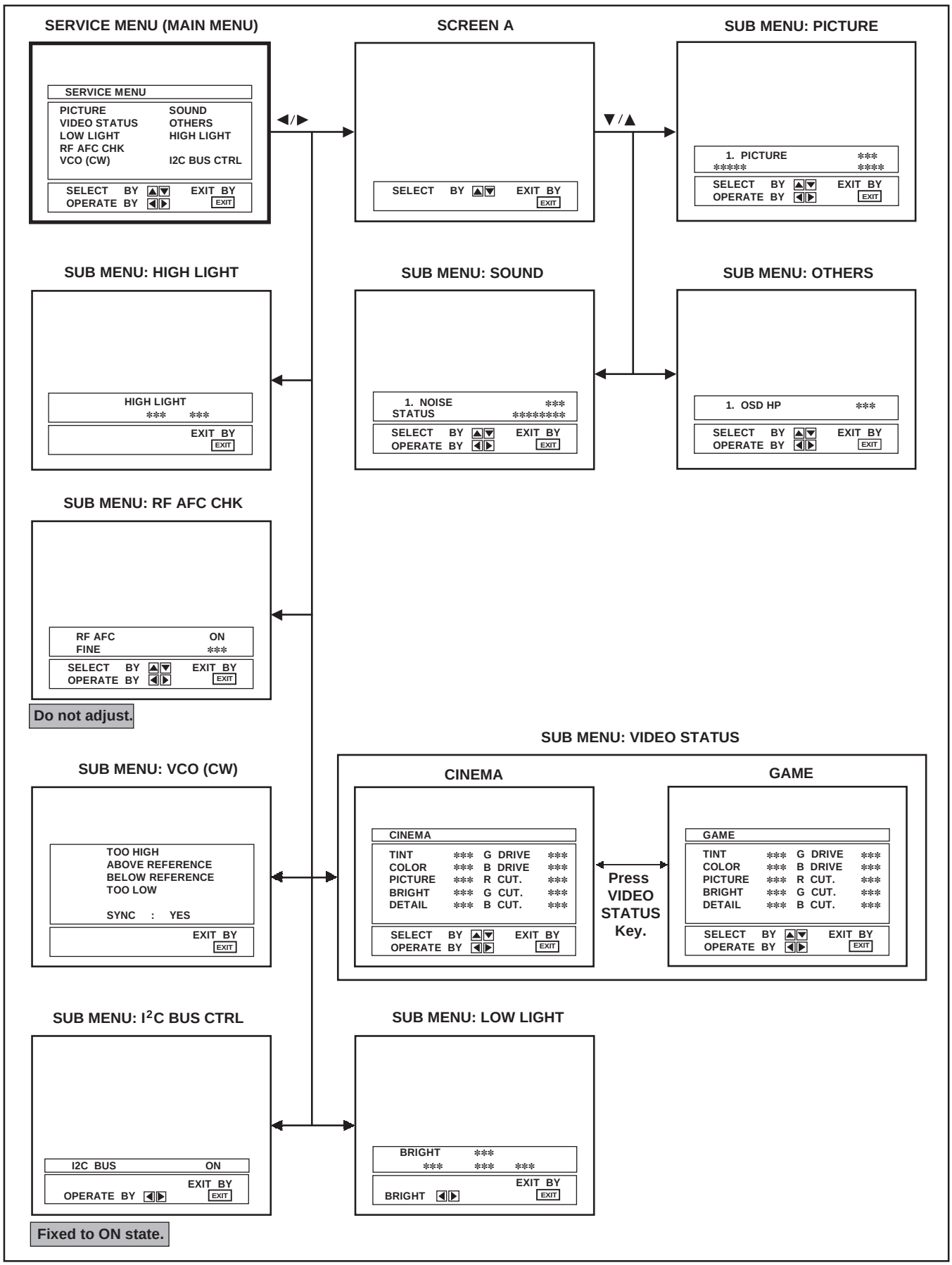
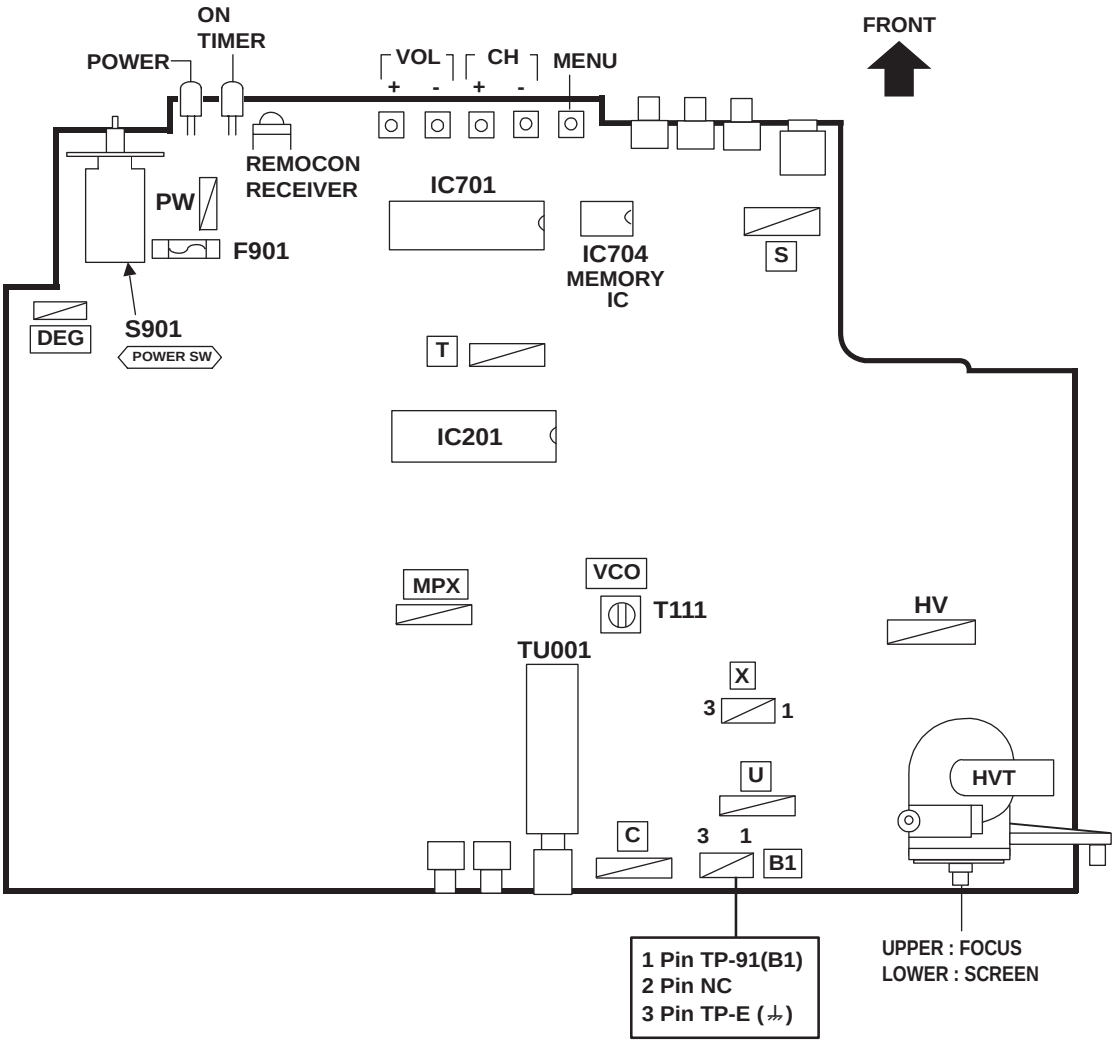


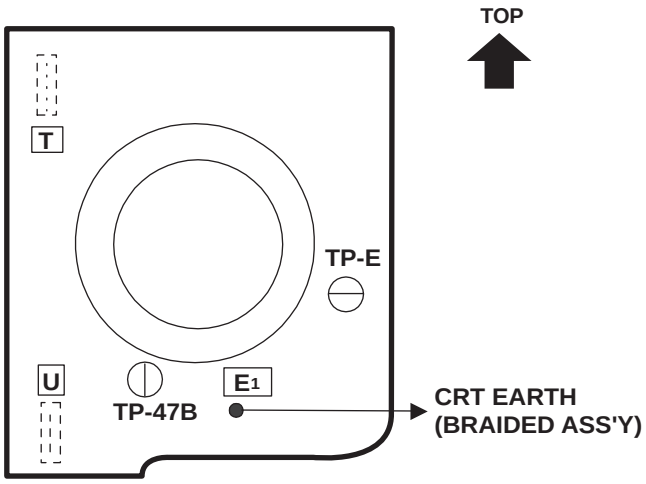
Fig. 3

ADJUSTMENT LOCATIONS

MAIN PWB



CRT SOCKET PWB
(SOLDER SIDE)



INITIAL SETTING VALUE OF SERVICE MENU

The setting (adjustment) using the remote control unit is made on the basis of the initial setting values.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
● Do not change the initial setting values of the setting (adjustment) items not listed in "ADJUSTMENTS".

● PICTURE

★ The following four setting items in the video mode and TV mode are linked each other.
Video mode: 8. EXT PIC., 9. EXT BRI., 10. EXT COL. and 11. EXT TINT
TV mode: 1. PICTURE, 2 . BRIGHT, 5. COL. NTSC and 6. TINT
When the setting items in the TV mode are adjusted, the same values will be set to the linking items in the video mode. For example, if the value of 1. PICTURE is changed, the value of 8. EXT PIC. will also be changed accordingly. (The initial setting values given in ( ) are offset values against the TV mode.)

★ When the four items (Nos. 8, 9, 10 and 11) are adjusted in the video mode, the setting values will be changed independently from those in the TV mode.

Setting item	Variable range	Initial setting value
1. PICTURE	000 ~ 127	040
2. BRIGHT	000 ~ 127	064
3. COL. PALM	000 ~ 127	070
4. COL. PALN	000 ~ 127	070
5. COL. NTSC	000 ~ 127	072
6. TINT	000 ~ 127	065
7. TV DTL	000 ~ 063	028
8. EXT PIC.	±025	(±000)
9. EXT BRI.	±025	(+000)
10. EXT COL.	±025	(±000)
11. EXT TINT	±025	(+001)
12. EXT DTL	000 ~ 063	030
13. P/N KILL	000 / 001	001
14. Y S CONT	000 ~ 031	031
15. TV Y-DL	000 ~ 007	001
16. EXT Y-DL	000 ~ 007	002
17. WPL SW	000 / 001	000
18. Y GAMMA	000 / 001	000
19. P/N G P.	000 / 001	000
20. COL. L SW	000 / 001	001
21. COL. LMT.	000 ~ 003	001
22. PN C. ATT	000 ~ 003	001
23. OFST. SW	000 / 001	000
24. OFST. B-Y	000 ~ 015	008
25. OFST. R-Y	000 ~ 015	008
26. C-TOF SW	000 / 001	001
27. TV T FO	000 ~ 003	001
28. TV T Q	000 ~ 003	000
29. EXT T FO	000 ~ 003	000
30. EXT T Q	000 ~ 003	000

Settingitem	Variable range	Initial setting value
31. C-TRAP	000 / 001	000
32. C-TR. FO	000 ~ 003	002
33. C-TRAP Q	000 ~ 003	000
34. FIX B/W	000 / 001	000
35. APA P. FO	000 ~ 003	001
36. DC TRAN.	000 ~ 007	006
37. B. ST. SW	000 / 001	000
38. B. ST. PO.	000 ~ 007	000
39. ABL GAIN	000 ~ 007	004
40. ABL PO.	000 ~ 007	000
41. HALF T.	000 ~ 002	001
42. DRV G SW	000 / 001	000
43. NT. COMB	000 / 001	001
44. COIN DET	000 ~ 003	001
45. NOISE L.	000 ~ 003	003
46. VCD MODE	000 / 001	000
47. V AGC SP	000 / 001	000
48. H POS. 50	000 ~ 031	007
49. H BLK. 50	000 ~ 007	000
50. V POS. 50	000 ~ 007	000
51. V SIZE50	000 ~ 127	024
52. V S CR50	000 ~ 127	018
53. V LIN. 50	000 ~ 031	004
54. H POS. 60	000 ~ 031	012
55. H BLK. 60	000 ~ 007	000
56. V POS. 60	000 ~ 007	000
57. V SIZE60	000 ~ 127	028
58. V S CR60	000 ~ 127	046
59. V LIN. 60	000 ~ 031	004
60. RF AGC	000 ~ 255	160

: Do not adjust.

● SOUND

Setting item	Variable range	Initial setting value
1. NOISE	000 / 001	001
2. IN LEVEL	000 ~ 063	020
3. FH MON.	000 / 001	000
4. ST VCO	000 ~ 063	025
5. PILOT	000 / 001	000
6. FILTER	000 ~ 063	030
7. LOW SEP.	000 ~ 063	022
8. HI SEP.	000 ~ 063	023
9. 5FH MON.	000 / 001	000
10. SAP VCO	000 ~ 063	026
11. IN GAIN	000 / 001	000
12. FIL. OFF.	±010	±000

: Do not adjust.

● VIDEO STATUS

Setting item	Variable range	Initial setting value	
		CINEMA	GAME
TINT	±20	±0	±0
COLOR	±20	–3	–3
PICTURE	±20	–10	–10
BRIGHT	±20	±0	±0
DETAIL	±15	±0	–5
G DRIVE	–99 ~ +50	–22	±0
B DRIVE	–99 ~ +50	–54	±0
R CUT.	±10	±0	±0
G CUT.	±10	±0	±0
B CUT.	±10	±0	±0

: Do not adjust.

● OTHERS

Setting item	Variable range	Initial setting value
1. OSD HP	000 ~ 063	023
2. OSD VP	000 ~ 015	012
3. H-CK SW	000 / 001	000

: Do not adjust.

● LOW LIGHT

Setting item	Variable range	Initial setting value
R CUTOFF	000 ~ 255	020
G CUTOFF	000 ~ 255	020
B CUTOFF	000 ~ 255	020

● HIGH LIGHT

Setting item	Variable range	Initial setting value
G DRIVE	000 ~ 255	128
B DRIVE	000 ~ 255	128

● RF AFC CHK

Setting item	Variable range	Initial setting value
RF AFC	ON / OFF	ON
FINE	–77 ~ +77	xx

: Do not adjust.

● I2C BUS CTRL

Setting item	Variable range	Initial setting value
I^2C BUS	ON / OFF	ON (Fixed to ON)

: Do not adjust.

ADJUSTMENTS

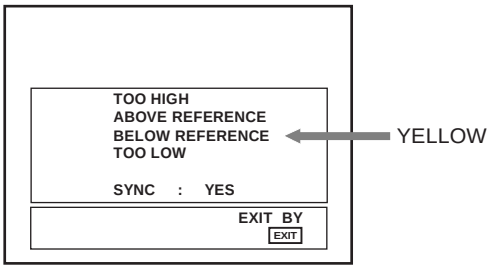
B1 POWER SUPPLY CHECK

Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 POWER SUPPLY	● **Signal Generator** ● **DC voltmeter**	**B1 (TP-91)** **TP-E (⏚)** **[B1 connector]**		1. Receive a black and white signal (color off). (NTSC) 2. Connect a DC voltmeter between B1 (TP-91) and TP-E (⏚) (between pins 1 and 3 of the connector B1). 3. Make sure that the voltage is **DC134.5 ± 2.0V**.

IF VCO ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment VCO (CW)	● **Signal Generator** ● **Remote control unit**		**CW TRANSF. (T111)** **[MAIN PWB]**	● **Under normal conditions, no adjustment is required.** 1. Receive any broadcast. (Use a channel without offset frequency.) 2. Select the sub menu screen **VCO (CW)** from the SERVICE MENU. (More specifically, in the SERVICE MENU, press the MENU ▲/▼ key to select VCO (CW) and then press the MENU ◄/► key to enter the sub menu screen VCO (CW) .) 3. Confirm that the color of "TOO HIGH" and "TOO LOW" changes in yellow as you turn the **CW TRANSF**. At this time, check that "SYNC: YES" appears on the screen. 4. Slowly turn the **CW TRANSF.** until "BELOW REFERENCE" changes to yellow. Also, at this time, check that "SYNC: YES" appears on the screen. 5. Press the **EXIT** key to return to the normal screen.

SUB MENU: VCO (CW)



RF AGC ADJUSTMENT

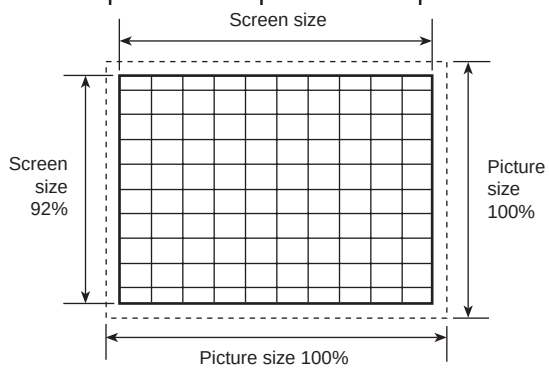
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of RF AGC	**Remote control unit**		**60. RF AGC**	1. Receive any broadcast. 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **60. RF AGC** with the MENU ▲/▼ key. 4. Press the MUTING key to turn off the color. 5. Press the MENU ◄ key to get noise on the screen picture. (The setting value will be decreased.) 6. Press the MENU ► key until noise disappears from the screen. 7. Change to other channels and make sure that there is no irregularity on the screen picture. 8. Press the MUTING key to turn on the color.

FOCUS ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of FOCUS	**Signal generator**		**FOCUS VR** **[In HVT]**	1. Receive a cross-hatch signal. 2. While watching the screen, adjust the **FOCUS VR** to make the vertical and horizontal lines as fine and sharp as possible. 3. Make sure that, when the screen is darkened, the lines remain in good focus.

DEFLECTION CIRCUIT ADJUSTMENT

The setting (adjustment) using the remote control unit is made on the basis of the initial setting values shown on page 14.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- **Do not change the initial setting values of the setting (adjustment) items not listed herein.**

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of V. HEIGHT V. POSITION V. LIN. V. S CR	● **Signal generator** ● **Remote control unit**		**56. V POS. 60** **57. V SIZE60** **58. V S CR60** **59. V. LIN. 60**	**(60Hz)** 1. Receive a cross-hatch signal. (NTSC or PAL-M) 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **56. V POS. 60** with the MENU ▲/▼ key, and confirm that the setting value is 0. **NOTE:** The value of **56. V POS. 60** should be fixed to 0. 4. Confirm the initial setting value of **57. V SIZE60**, **58. V S CR60**, and 5**9. V. LIN. 60**. 5. Adjust **57. V SIZE60** and make the vertical screen size **92%** of the picture size, with the MENU ◀/▶ key. 6. Adjust **59. V. LIN. 60** and **58. V S CR60** to get the best vertical linearity, with the MENU ◀/▶ key.
			50. V POS. 50 **51. V SIZE50** **52. V S CR50** **53. V. LIN. 50** 	**(50Hz)** 1. Receive a cross-hatch signal. (PAL-N) 2. In the sub menu screen **PICTURE**, select **50. V POS. 50, 51. V SIZE50**, **52. V S CR50,** and **53. V. LIN. 50** with the MENU ▲/▼ key, and confirm their initial setting values. 3. Adjust **51. V SIZE 50** and make the vertical screen size **92%** of the picture size, with the MENU ◀/▶ key. 4. Adjust **53. V. LIN. 50** and **52.V S CR50** to get the best vertical linearity, with the MENU ◀/▶ key. 5. Adjust **50. V POS. 50** so that the vertical center line comes close to the CRT vertical center as much as possible, with the MENU ◀/▶ key. ● Readjust V SIZE, V. LIN, V S CR if necessary.
Adjustment of H. POSITION	● **Signal generator** ● **Remote control unit**		**54. H POS.60**	**(60Hz)** 1. Receive a cross-hatch signal. (NTSC or PAL-M) 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **54. H POS.60** with the MENU ▲/▼ key. 4. Confirm the initial setting value of **54. H POS.60**. 5. Adjust **54. H POS.60** so that the screen will be horizontally centered, with the MENU ◀/▶ key.
			48. H POS.50	**(50Hz)** 1. Receive a cross-hatch signal. (PAL-N) 2. In the sub menu screen **PICTURE**, select **48. H POS.50** with the MENU ▲/▼ key. 3. Confirm the initial setting value of **48. H POS.50**. 4. Adjust **48. H POS.50** so that the screen will be horizontally centered, with the MENU ◀/▶ key.

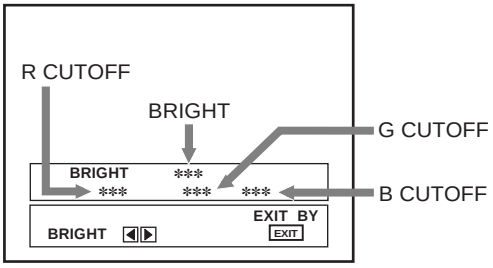
VIDEO/CHROMA CIRCUIT ADJUSTMENT

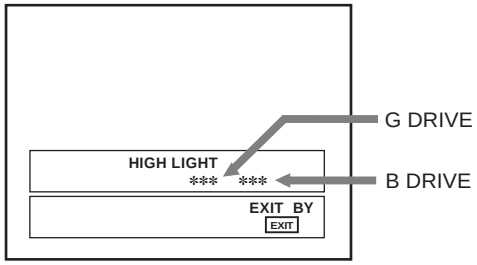
The setting (adjustment) using the remote control unit is made on the basis of the initial setting values shown on pages 14 and 15.
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
● Do not change the initial setting values of the setting (adjustment) items not listed herein.

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>Adjustment of WHITE BALANCE (Low light)</td><td>● Signal generator
● Remote control unit</td><td></td><td>BRIGHT

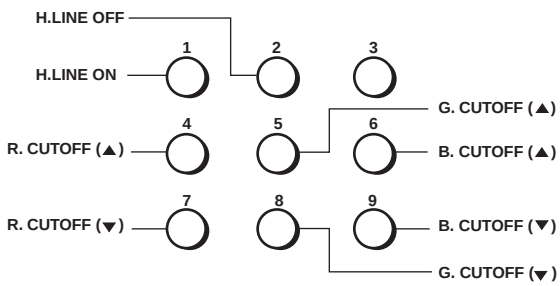
R CUTOFF
G CUTOFF
B CUTOFF

SCREEN VR
(In HVT)</td><td>1. Receive a black and white signal (color off).
2. Select the sub menu screen LOW LIGHT from the SERVICE MENU.
3. Confirm that the value of BRIGHT, R CUTOFF, G CUTOFF, and B CUTOFF is set to the initial setting value.
4. Press the 1 key on the remote control unit to produce a single horizontal line.
5. Turn the SCREEN VR fully counterclockwise, then slowly turn it clockwise to where a red, blue, or green color is faintly visible.
6. Use keys 4 ~ 9 on the remote control unit and adjust the other 2 colors to where the single horizontal line becomes white.
7. Turn the SCREEN VR to where the single horizontal line glows faintly.
8. Press the 2 key to stop producing a single horizontal line.
NOTE: The key 3 acts in the same way as the EXIT key.

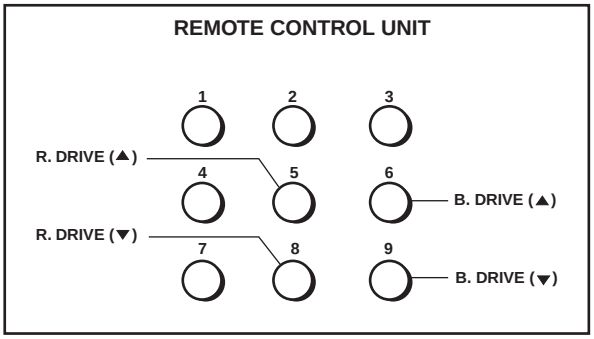
SUB MENU: LOW LIGHT
 
</td></tr>
<tr><td>Adjustment of WHITE BALANCE (High light)</td><td>● Signal generator
● Remote control unit</td><td></td><td>G DRIVE
B DRIVE</td><td>1. Receive a black and white signal (color off).
2. Select the sub menu screen HIGH LIGHT from the SERVICE MENU.
3. Confirm that the value of G DRIVE and B DRIVE is set to the initial setting value.
4. Use the keys 5 and 8 or 6 and 9 to produce a white screen.
NOTE: The key 3 acts in the same way as the EXIT key.

SUB MENU: HIGH LIGHT
 
</td></tr>
</table>

REMOTE CONTROL UNIT

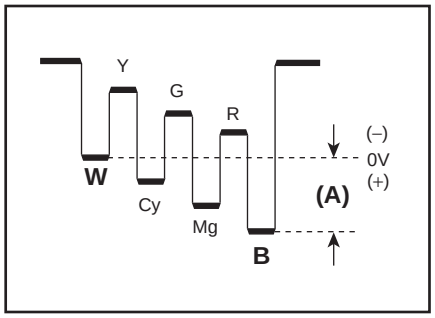


REMOTE CONTROL UNIT

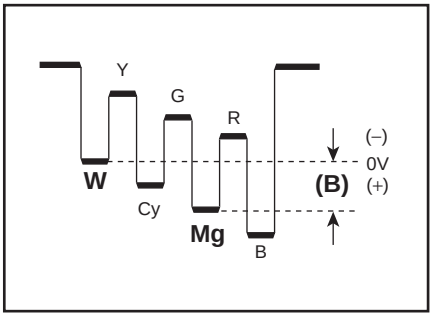


Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB BRIGHT	**Remote control unit**		**2. BRIGHT**	1. Receive any broadcast. 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **2. BRIGHT** with the MENU ▲/▼ key, and confirm its initial setting value. 4. If the brightness is not the best with the initial set value, make fine adjustment until you get the best brightness, with the MENU ◄/► key.
Adjustment of SUB CONT.	**Remote control unit**		**1. PICTURE**	1. Receive any broadcast. 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **1. PICTURE** with the MENU ▲/▼ key, and confirm its initial setting value. 4. If the contrast is not the best with the initial set value, make fine adjustment until you get the best contrast, with the MENU ◄/► key.
Adjustment of SUB COLOR -I	**Remote control unit**			**[Method of adjustment without measuring instrument]**
			3. COL. PALM	**(PAL-M COLOR)** 1. Receive a PAL-M broadcast. 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **3. COL. PALM** with the MENU ▲/▼ key, and confirm its initial setting value. 4. If the color is not the best with the initial set value, make fine adjustment until you get the best color, with the MENU ◄/► key.
			4. COL. PALN	**(PAL-N COLOR)** 1. Receive a PAL-N broadcast. 2. In the sub menu screen **PICTURE**, select **4. COL. PALN** with the MENU ▲/▼ key, and confirm its initial setting value. 3. If the color is not the best with the initial set value, make fine adjustment until you get the best color, with the MENU ◄/► key.
			5. COL. NTSC	**(NTSC COLOR)** 1. Receive a NTSC broadcast. 2. In the sub menu screen **PICTURE**, select **5. COL. NTSC** with the MENU ▲/▼ key, and confirm its initial setting value. 3. If the color is not the best with the initial set value, make fine adjustment until you get the best color, with the MENU ◄/► key.

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB COLOR-II	● **Signal generator** ● **Oscillo-scope** ● **Remote control unit**	**TP-47B TP-E (⏚) [CRT SOCKET PWB]**		**[Method of adjustment using measuring instrument]**
			3. COL. PALM	**(PAL-M COLOR)** 1. Receive a PAL-M full field color bar signal (75% white). 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **3. COL. PALM** with the MENU ▲/▼ key, and confirm its initial setting value. 4. Connect the oscilloscope between TP-47B and TP-E. 5. Adjust **3. COL. PALM** to set the value **(A)** in the figure to **+10V (W & B)**, with the MENU ◄/► key.
			4. COL. PALN	**(PAL-N COLOR)** 1. Receive a PAL-N full field color bar signal (75% white). 2. In the sub menu screen **PICTURE**, select **4. COL. PALN** with the MENU ▲/▼ key, and confirm its initial setting value. 3. Connect the oscilloscope between TP-47B and TP-E. 4. Adjust **4. COL. PALN** to set the value **(A)** in the figure to **+8V (W & B)**, with the MENU ◄/► key.
			5. COL. NTSC	**(NTSC COLOR)** 1. Receive a NTSC full field color bar signal (75% white). 2. In the sub menu screen **PICTURE**, select **5. COL. NTSC** with the MENU ▲/▼ key, and confirm its initial setting value. 3. Connect the oscilloscope between TP-47B and TP-E. 4. Adjust **5. COL. NTSC** to set the value **(A)** in the figure to **+8V (W & B)**, with the MENU ◄/► key.
Adjustment of SUB TINT-I	● **Signal Generator** ● **Remote control unit**		**6. TINT**	**[Method of adjustment without measuring instrument]** 1. Receive a NTSC color bar signal. 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **6. TINT** with the MENU ▲/▼ key, and confirm its initial setting value. 4. If the tint is not the best with the initial set value, make fine adjustment until you get the best tint, with the MENU ◄/► key.



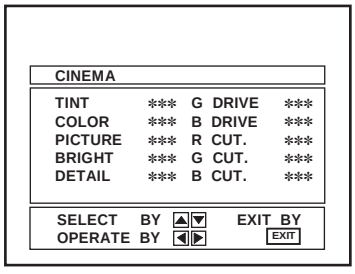
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB TINT-II	● **Signal generator** ● **Oscillo-scope** ● **Remote control unit**	**TP-47B TP-E (⏚) [CRT SOCKET PWB]**	**6. TINT**	**[Method of adjustment using measuring instrument]** 1. Receive a NTSC 3.58 color bar signal (full field color bar 75% white). 2. Select the sub menu screen **PICTURE** from the SERVICE MENU. 3. Select **6. TINT** with the MENU ▲/▼ key, and confirm its initial setting value. 4. Connect the oscilloscope between TP-47B and TP-E. 5. Adjust **6. TINT** to set the value **(B)** in the figure to **+15V (W & Mg)**, with the MENU ◀/▶ key.



VIDEO STATUS ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
Setting of VIDEO STATUS	**Remote control unit**		**TINT** **COLOR** **PICTURE** **BRIGHT** **DETAIL** **G DRIVE** **B DRIVE** **R CUT.** **G CUT.** **B CUT.**	**NOTE:** Do not adjust. Each value should be set to the initial value. 1. Select the sub menu screen **VIDEO STATUS-CINEMA** from the SERVICE MENU. 2. Select **TINT ~ B CUT.** with the MENU ▲/▼ key, and reset each value to the initial setting value on page 15, with the MENU ◀/▶ key. 3. Press the VIDEO STATUS key on the remote control unit to select **VIDEO STATUS-GAME**. (Each time you press the VIDEO STATUS key, **CINEMA** and **GAME** alternates.) 4. Make similar settings as in 2 above.

SUB MENU: VIDEO STATUS

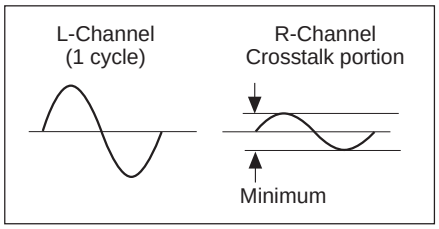


MTS CIRCUIT (AUDIO CIRCUIT) ADJUSTMENT

The setting (adjustment) using the remote control unit is made on the basis of the initial setting values shown on pages 15.
● Do not change the initial setting values of the setting (adjustment) items not listed herein.

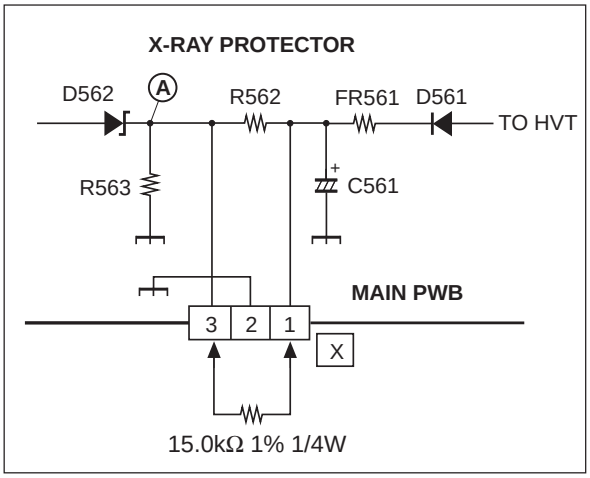
Item	Measuring instrument	Test point	Adjustment part	Description
Check of MTS INPUT LEVEL	**Remote control unit**		**2. IN LEVEL**	1. Select the sub menu screen **SOUND** from the SERVICE MENU. 2. Select **2. IN LEVEL** with the MENU ▲/▼ key, and confirm that it is set at its initial setting value.
Adjustment of MTS STEREO VCO	**● Signal generator** **● Frequency counter**	**R OUT [AUDIO OUT]**	**3. FH MON.** **4. ST VCO**	1. Receive a NTSC RF signal (non-modulated sound signal) from the Antenna terminal. 2. Select the sub menu screen **SOUND** from the SERVICE MENU. 3. Select **3. FH MON.** with the MENU ▲/▼ key, and change its setting value from 0 to 1 with the MENU ◄/► key. 4. Connect the frequency counter to the R OUT terminal of the AUDIO OUT. 5. Select **4. ST VCO** with the MENU ▲/▼ key, and confirm its initial setting value. 6. Adjust **4. ST VCO** so that the frequency counter reads 15.73kHz ± 0.1 kHz, with the MENU ◄/► key. 7. Again select **3. FH MON.** with the MENU ▲/▼ key, and return its setting value from 1 to 0 with the MENU ◄/► key.
Adjustment of MTS SAP VCO	**● Signal generator** **● Frequency counter**	**R OUT [AUDIO OUT]**	**9. 5FH MON.** **10. SAP VCO**	1. Receive a NTSC RF signal (non-modulated sound signal) from the Antenna terminal. 2. Connect a 1-MΩ resistor across pins 4 and 3 of the MPX connector. 3. Select the sub menu screen **SOUND** from the SERVICE MENU. 4. Select **9. 5FH MON.** with the MENU ▲/▼ key, and change its setting value from 0 to 1 with the MENU ◄/► key. 5. Connect the frequency counter to the R OUT terminal of the AUDIO OUT. 6. Select **10. SAP VCO** with the MENU ▲/▼ key, and confirm its initial setting value. 7. Adjust **10. SAP VCO** so that the frequency counter reads 78.67kHz ± 0.5 kHz, with the MENU ◄/► key. 8. Again select **9. 5FH MON.** with the MENU ▲/▼ key, and return its setting value from 1 to 0 with the MENU ◄/► key.
Check of MTS FILTER	**Remote control unit**		**6. FILTER**	1. Select the sub menu screen **SOUND** from the SERVICE MENU. 2. Select **6. FILTER** with the MENU ▲/▼ key, and confirm that it is set at its initial setting value.

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of MTS SEPARA-TION	● **TV audio multiplex signal generator** ● **Oscillo-scope**	**L OUT** **R OUT** **[AUDIO OUT]**	**7. LOW SEP.** **8. HI SEP.**	1. Input a stereo L signal (300Hz) from the TV audio multiplex signal generator to the Antenna terminal. (NTSC) 2. Connect the oscilloscope to the L OUT terminal of the AUDIO OUT, and display one cycle portion of the 300Hz signal as shown in the figure. 3. Connect the oscilloscope to the R OUT terminal of the AUDIO OUT, and increase the voltage sensitivity of the oscilloscope. 4. Select the sub menu screen **SOUND** from the SERVICE MENU. 5. Select **7. LOW SEP.** with the MENU ▲/▼ key, and confirm its initial setting value. 6. Adjust **7. LOW SEP.** so that the peak-to-peak level of the 300Hz signal becomes minimum, with the MENU ◄/► key. 7. Change the input signal to 3kHz, and similarly adjust for **8. HI SEP.** by repeating steps 2 to 6.



■ X-RAY PROTECTION CHECK

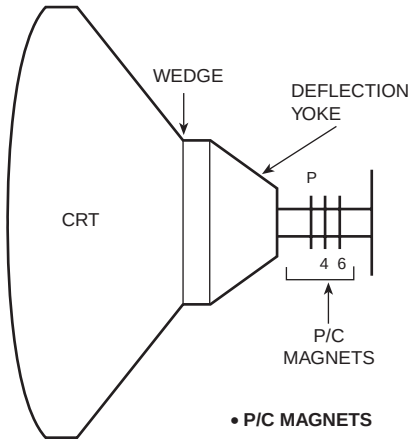
Item	Measuring instrument	Test point	Adjustment part	Description
Check of X-RAY PROTEC-TION		**Pins 1 and 3** **[X Connector on MAIN PWB]**		● **Prepare the following resistor.** **15.0kΩ ±1% 1/4W** 1. Turn on the power and receive any signal. 2. Connect the resistor between pins **1** and **3** of the **X** connector on the Main PW Board. 3. Make sure that the picture disappears. 4. Unplug the AC power cord. 5. Disconnect the resistor from the X connector. 6. Plug the AC power cord and make sure that the picture appears normally. **X-Ray Protector Operation:** Normally the voltage at point "A" does not exceed the Zener voltage of D562. (The voltage at point "A" will be determined by dividing the voltage from HVT (FBT) by R562 and R563.) When you connect a resistor of 15.0kΩ or less in parallel with R562, the voltage at point "A" is increased, D562 turns ON, and the X-ray protection circuit is activated. Once it is activated, you need to unplug the AC power cord to restore the X-ray protection circuit.



PURITY, CONVERGENCE ADJUSTMENT

PURITY ADJUSTMENT

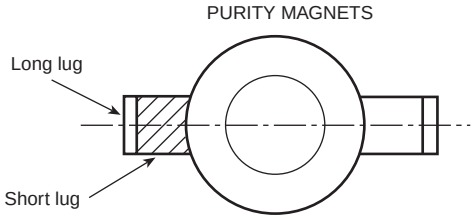
1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges. (Fig. 1.)
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig. 2)
7. Adjust the gap between two lugs so that the green raster will come into the center of the screen. (Fig. 3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a cross-hatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



• P/C MAGNETS

P : PURITY MAGNET
4 : 4 POLES (convergence magnets)
6 : 6 POLES (convergence magnets)

Fig. 1



Bring the long lug over the short lug and position them horizontally.

Fig. 2

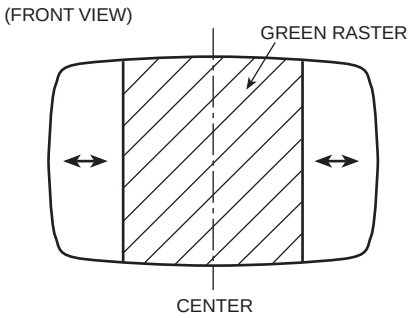


Fig. 3

STATIC CONVERGENCE ADJUSTMENT

1. Input a cross-hatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig. 1) to turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta (red/blue) and green lines in the center of the screen to turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

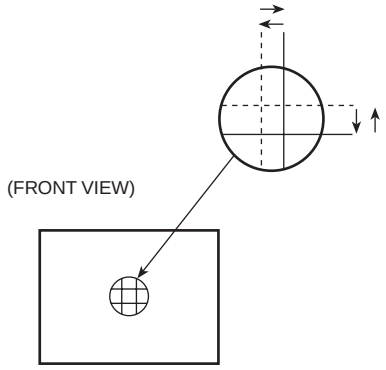


Fig. 1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

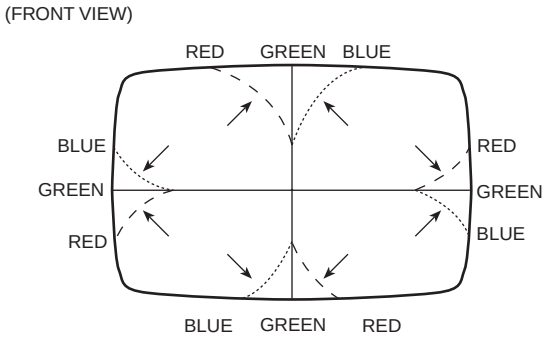


Fig. 2

- After adjustment, fix the wedge at the original position.
  Fasten the retainer screw of the deflection yoke.
  Fix the 6 magnets with glue.

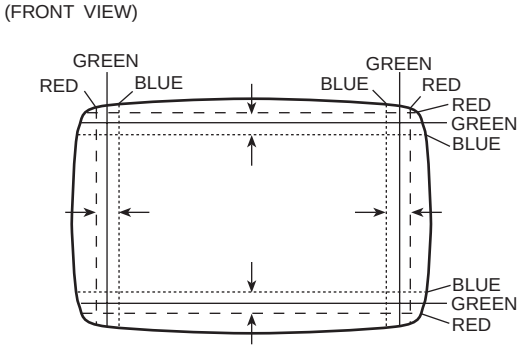


Fig. 3

SELF-CHECK FUNCTIONS

1. Outline

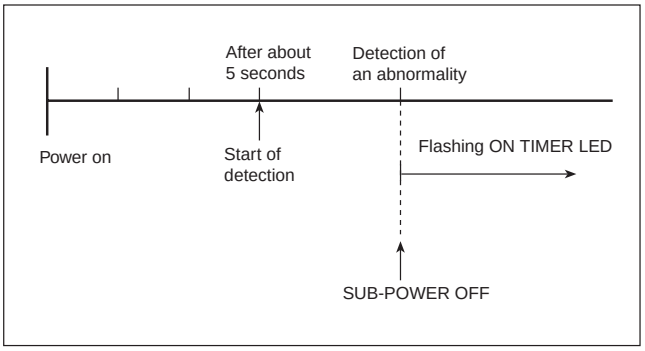
This model has self-check functions given below. When an abnormality has been detected, the SUB POWER is turned off and the ON TIMER LED flashes to inform of the failure. An abnormality is detected by the signal input state of the control line connected to the microcomputer.

2. Self-check items

Check item	Details of detection	Method of detection	State of abnormality
Over-current protection	An over-current on the low B line is detected.	The microcomputer detects the possible abnormality at 1-sec. intervals. If NG state is detected for more than 1 ms, the microcomputer judges that there is an abnormality.	When an abnormality has been detected, the SUB-POWER is turned off. While the SUB-POWER is being turned off, the POWER key on the remote control unit is not operational until the power cord is taken out and put in again.
CRT NECK protection	Operation of CRT NECK protection circuit	DITTO	DITTO
X-ray protection	Operation of X-ray protection circuit.	DITTO	DITTO

3. Self-check indicating function

When an abnormality has been detected at about 5 seconds after the power is turned on, the SUB POWER is turned off immediately and the ON TIMER LED flashes.



[Indication by the LED]

Item	LED flashing intervals	Priority of detection
Over-current protection/X-ray protection	At 0.5-second intervals	1
CRT NECK protection	At 1-second intervals	2

JVC

VICTOR COMPANY OF JAPAN, LIMITED
TELEVISION RECEIVER DIVISION 1106 Heta, Iwai-city, Ibaraki-prefecture, 306-0698, Japan